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ABSTRACT

Two studies of the development of children's moral relationships with nature addressed such questions as: (1) What does it mean to say that we have an obligation not to harm the natural environment? (2) Does the natural environment feel pain? (3) Does it have rights? or (4) Is moral obligation an inappropriate construct by which to understand the moral relation of humans with nature? In one study, 60 children in grades 2, 5, and 8 were interviewed about the Prince William Sound Oil Spill. In a second study, 72 children in grades 1, 3, and 5 in an impoverished inner-city black community were interviewed on their conceptions of and values about nature. The preliminary findings from these studies provide evidence for several overarching ways in which children reason about the natural environment: (1) homocentric reasoning, in which an appeal is made to the child's understanding of how the action of one person or group harms the physical welfare of others, or infringes on others' rights: the natural environment acts as an intermediary; (2) intrinsic values and rights reasoning, which highlights the idea that the natural environment has a moral standing at least partly independent of its value as a human commodity; (3) relational reasoning, which consists of framing the relationship with animals in a homocentric way such that animals serve human psychological needs; and (4) conceptions of harmony with nature that follow syllogistic reasoning. The findings build on children's obligatory and discretionary moral judgments and respond to two different questions on moral theory: What does morally right action consist of? and, What does it mean to be a morally good person? (HOD)

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CHILDREN'S MORAL RELATIONSHIPS WITH NATURE

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Paper presented at the May 1992 meeting of the Jean Piaget Society, Montreal, Canada.

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CHILDREN'S MORAL RELATIONSHIPS WITH NATURE

Psychological research on children's moral development has largely investigated moral relations which exist between people (e.g., Damon, 1977; Eisenberg, 1982; Gilligan, 1982; Kohlberg, 1984; Nucci, 1981; Smetana, 1981; Turiel, 1983). But is it also possible for children to have moral relationships, not with other people, but with nature? -- with animals? trees? landscapes? the earth? Such questions are puzzling for the criteria that usually help establish human ethics are not present, or at least not fully present, in the natural environment. For instance, when we say we have a moral obligation not to harm other people (e.g., physical assault), we recognize that other people, like ourselves, are capable of feeling pain and are the holders of certain rights (e.g., to life and liberty). But what then does it mean to say that we have an obligation not to harm the natural environment? Does the natural environment feel pain? Does it have rights? Or is moral obligation an inappropriate construct by which to understand the moral relation of humans with nature? Toward investigating such questions ontogenetically, this paper provides an approach for framing a research program on the development of children's moral relationships with nature.

Insofar as information is available about individuals' moral concern for the natural environment, most has come from survey research. One important line of inquiry by Kellert shows evidence for children's diverse attitudes toward animals (Kellert, 1985), and differences between the Japanese and American publics' perceptions of wildlife (1991). Other studies have sought to establish relations between age and respect for the environment (Bunting and Cousins, 1985); age and support for environmental spending (Honnold, 1984); age and concern about environmental problems (McTeer, 1978); gender differences and environmental knowledge (Gifford, Hay, & Boros, 1982/83); and gender differences and environmental concern (Baca, 1976).

In her comprehensive review of the environmental psychological literature, Chawla (1988) summarizes, however, the limitations of this body of survey research.

> Survey research may reveal that environmental responses vary with age, gender, ability, and place of residence, but it cannot explain why respondents answer as they do. For this purpose, experiments in natural settings, interviews, and observations are required...As a sad reflection of the status of this field, no intensive research of this kind has yet been done." (p. 16)

We agree with Chawla that in-depth interviews are needed in future research to understand the reasons why subjects respond as they do to environmental questions. (See Turiel, Killen, & Helwig, 1987, and Helwig, 1991, for similar critiques of survey research on individuals' moral beliefs.) Stated more generally, a theoretical approach is needed to guide a research program in this new area of study.

We purpose one such approach that builds from the social-cognitive literature, and in specific recent research on children's obligatory and discretionary moral judgments (Kahn, 1992). Following a good deal of philosophical theory (Kant, 1785/1964; Gewirth, 1978; Rawls, 1971) and psychological research (Kohlberg, 1971; Turiel, 1983), an obligatory moral judgment is one

which requires an act of a moral agent (prescriptivity), even if that person lives in a different geographical location with different customary practices (generalizability). A discretionary judgment is one where performing a moral act, while not required of an agent, is nevertheless conceived of as morally worthy and admirable (see Williams, 1985; cf. Eisenberg, 1982, 1989).

Both types of judgments appeared in an earlier study by Kahn and Turiel (1988) on children's conceptions of trust. In this study, children consistently viewed violations of trust involving deception (a person steals from his friend) as violations of moral obligations, and based their evaluations on reasons such as unfairness and the need to adhere to duties. A contrasting set of findings were obtained for violations of emotional support (a person continues with a personal activity -- watching TV -- in place of talking with a friend who has a problem). Typically, in this latter situation, children said that while the friend in the story should help the other (because of the other's need for psychological aid), the friend is under no obligation to do so. In other words, a moral course of action was recommended but not required (discretionary morality).

This distinction between obligatory and discretionary moral judgments was systematically studied by Kahn (1992) for both positive moral acts (rendering economic aid to a needy family) and negative moral acts (theft), in conditions that varied the agent's cost (low and high). For instance, one positive situation involved a child who helps a starving family: in the low cost condition, the child helps by giving the family part of his day's lunch money, while in the high cost condition the child gives his entire lunch money for the week. The results from this study provide evidence that children as young as second grade make distinctions between moral acts that are morally obligatory for an agent to perform, and moral acts that are left to the agent's discretion. Such judgments were also shown to be sensitive to the degree of cost to the agent, and were applied differentially to the type of act, positive or negative. In turn, to better understand the basis and development of discretionary moral judgments, children in the above study were asked whether they would praise the agent. The large majority of children who viewed the agent's act as discretionary provided praiseworthy evaluations. From a developmental perspective, younger children consistently talked about praising the act, while older children talked about praising the virtuous character of the agent, including virtues of benevolence, sacrifice, and supererogation.

Both obligatory and discretionary moral judgments are proposed to be central to understanding and characterizing environmental views. For instance, drawing on the environmental philosophical literature, consider three overarching views. One view can be characterized as homocentric, in that it holds that the environment need only be protected when human welfare is at stake (see Frankena, 1979, for an overview). For example, from this perspective, it is sometimes argued that the trees in the Amazon River Basin should be protected because ultimately the quality of the air humans breath, and thus the quality of human life, depend on the survival of the trees. Judgments which support a homocentric environmental orientation may well entail all the features of a morally obligatory judgment as characterized by person-to-person relations (prescriptivity and generalizability), since at stake is how the action of one person or group of people harms the physical welfare of others: the natural environment simply acts as the intermediary.

A second view holds that the natural world, commonly animals, have intrinsic value or accrue rights due to some central criterion, such as that they are sentient and capable of suffering (Miller, 1982; Regan, 1983; Stone, 1986). While this view might appear to entail judgments of obligation, the extent and strength of the obligations remain to be determined. This is because the natural world is restricted in qualities that comprise human agency, such as purposeful action, which are often viewed as themselves generating values and rights (Gewirth, 1978).

A third view holds that there are values that humans ought to appreciate or come to appreciate that reside in connection to the natural world (Kohak, 1984; Leopold, 1970; Rolston, 1989). From this perspective, people are encouraged to widen their range of interests and perceptions, and to see themselves in relation to the natural rather than opposed. Potentially, this viewpoint draws substantively on morally discretionary judgments: moral in the sense that such judgments advocate a position on what constitutes a good or proper or rightly-lived life, and discretionary in the sense that while individuals would recommend that others become sensitive to such a position, they would not require it of others upon penalty of moral blame and legal sanctions.

Preliminary Findings from Two Studies on Children's Environmental Moral Reasoning

Two current studies highlight the appropriateness of these distinctions for studying children's relationships with nature. In one study (in preparation), we interviewed 60 children in grades 2, 5, and 8 about the Prince William Sound Oil Spill. In a second study (in preparation), we interviewed 72 children in grades 1, 3, and 5 in an impoverished inner-city black community on their conceptions of and values toward nature. The data from both studies are currently being coded, and the results will be reported formally at a later time. At this point, we simply wish to present qualitative sketches of some relevant aspects of the justification data. Our goal is to provide an initial sense of how children understand their moral relationships with nature, and to use these findings suggestively to inform on larger theoretical issues in moral-developmental psychology.

We are beginning to see evidence for several overarching ways in which children reason about the natural environment.

Homocentric. This first way is perhaps the most straight forward. An appeal is made to how the action of one person or group of people harms the physical welfare of others, or infringes on other's rights: the natural environment acts as an intermediary. For example, consider the following justifications children provided about why it is wrong to pollute a waterway:

> "[It's not alright to pollute the bayou] because if it's dirty I might get sick." (5F)[1]
>
> "[It's not alright because] when you go to the beach and you can't sometimes you can't swim in it. You probably cut your feet. And it's very dangerous." (5M)
>
> "[It's not alright] because some people that don't have homes, they go and drink out of the rivers and stuff and they could die because they get all of that dirt and stuff inside of their bodies." (5M)

In these responses, children say that the underlying reason why environmental degradation is wrong lies in the environment's harmful effect on human welfare: sickness, injury, and death.

A less direct form of homocentric reasoning can be seen in aesthetic justifications. Here an appeal is made to ways in which the natural environment can render pleasure to humans in terms of its beauty.

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[1]The number signifies the child's grade level (e.g., 5 for 5th grade) and the letter signifies gender (e.g., F for female).

"[It is not alright to throw trash in the local bayou because] the bayou, it should look beautiful...Because like if my relatives or something come over, I could take them to the bayou and see, and show them how beautiful it is and clean." (5M)

"A better one [bayou] is a cleaner one, is the best because...if you live around dirtiness then it won't look good around your house." (5M)

This reasoning appears to turn centrally on how humans appreciate the aesthetic experience of the natural environment. Thus, for example, the first child reasons that it is not alright to throw trash in the bayou because a bayou should look beautiful, and that other humans (his relatives) would also like to see a beautiful bayou. It is this appeal to human sensibility and pleasure that reflects homocentric reasoning. It may also be the case, however, that such homocentric aesthetic reasoning lays the groundwork for aspects of a more biocentric perspective. For it seems plausible that many biocentric concepts -- such as those that focus on the intrinsic value of nature (see below) -- depend on valuing the natural environment in some experientially aesthetic way.

Intrinsic Value and Rights. Reasoning in this way highlights that the natural environment has a moral standing at least partly independent of its value as a human commodity. One form of this reasoning establishes this view largely in terms of a naturalism, or what could be called a naturalistic fallacy in its most literal form.

"Because water is what nature made; nature didn't make water to be purple and stuff like that, just one color. When you're dealing with what nature made, you need not destroy it." (5M)

"I think that neither one should throw their trash in the bayou because the bayou has been clear for a whole lot of years." (5M)

Both children highlight that what is ("what nature made") ought to remain ("you need not destroy it"). Thus an "ought" is derived from what "is".

A second form of this reasoning focuses on the rights of nature. Two ways of establishing such natural rights appear. In one way, natural objects (usually animals) are compared directly with humans:

"Bears are like humans, they want to live freely." (5M)

"Fishes, they want to live freely, just like we live freely...They have to live in freedom, because they don't like living in an environment were there is much pollution that they die every day." (5M)

Thus an animal's desire ("to live freely") is viewed to be equivalent to that of a human's desire, and because of this direct equivalency animals merit the same moral consideration as do humans. In turn, a second way of establishing rights for nature occurs through establishing indirect compensatory relationships:

"Fishes, they don't have the same things we have. But they do the same things. They don't have noses, but they have scales to breathe, and they have mouths like we have mouths. And they have eyes like we have eyes. And they have the same co-ordinates we have....A co-ordinate is something like, if you have something different, then I'm going to have something, but its going to be the same. Just going to be different." (5M)

Here Arnold struggles, quite eloquently, with the idea of a "co-ordinate" by which he seeks to explain that while animals are in some respects not the same as people (they don't have noses like people do), that in important functions (such as breathing and seeing) they are the same. In other words, this child moves beyond a reciprocity based on directly perceivable and salient characteristics to be able to establish equivalences based on functional properties.

At this point, it would be worth pointing to some findings that bear on the relations between justice and welfare reasoning. For, in our view, part of the confusion in the gender debate in moral development stems from attempting to drive a wedge between the two constructs. In such attempts, two problems arise. First, a great deal of research shows that the reasoning of individuals (females and males) includes considerations based on both justice and welfare (e.g., Helwig, 1991; Killen, 1990; Laupa, 1991; Nucci, 1986; Smetana, 1982; Tisak, 1986; Turiel, Hildebrandt, & Wainryb, 1991; Wainryb, 1991). Secondly, there is some evidence that justice and welfare considerations draw and build upon one another in development. For example, in one study (Kahn, 1992) welfare-in-compensation reasoning was categorized as a welfare justification, as the welfare needs of self and other were set in some compensatory balance. However, it was also shown that this category could also be viewed as welfare considerations organized by an equilibratory structure, since the very balancing of two distinct welfare claims reflected a form of justice, though framed so as to highlight human needs. This was not to say that justice replaced welfare, but necessarily incorporated it. For related results along these lines see Davidson, Turiel, and Black (1983) and Walker (1989) (cf. Arsenio, 1988).

Further evidence for the interdependency of justice and welfare constructs appears from our current analyses. For example, on a very simple level the following child grounds the idea of unfairness to animals based on the harm that animals incur:

> "It's unfair, you're hurting animals and living things that God made with your bad laws." (5F)

Conversely, and perhaps more complex, welfare considerations can be balanced by an equilibratory structure:

> "People are chopping down the rain forest and animals are losing their homes the size of this school in about twenty minutes and plus they're doing that just because people need to get coffee and to get lumber." (5M)

This child appears to establish the legitimacy of human needs (for coffee and lumber) based on the magnitude of harm to the natural environment ("animals are losing their homes"). It is this child's very attempt to work out a satisfactory (or we might add here the idea of a fair) balance between welfare claims that we wish to highlight. For it further points to the interrelations between justice and welfare.

Relational Reasoning: Toward an Intimacy with Nature While welfare considerations can be seen to underlie justice reasoning, so too does welfare appear to underlie the biocentric idea that humans can have intimate relationships with nature. The developmental precursor to such an idea can perhaps be seen in the way that children view nature to impact favorably on their own psychological welfare:

"[It would make me sad if birds were harmed because] we wouldn't have birds to wake us up in the morning...And that's what makes me happy because it sings and I like birds." (3F)

[Animals are important to me because] "when a person in my family like died or something and they could come, they could come and cheer me up." (5M)

What we see here is the beginning of a relationship with animals, though still clearly framed in a homocentric way such that animals serve human psychological needs. In turn, it is plausible that such psychological relationships allow for the development of a more biocentric relationship to occur. Albeit this becomes a tricky issue. For, in our view, a biocentric relationship with the environment necessarily entails some homocentricism, since humans comprise a part of the very relationship under consideration. From this view, relational environmental reasoning would have embedded within it some homocentrism. Tentative support for this view comes from two potential forms of biocentric relational reasoning.

Personalized Caretaking. Here there is a focus on taking care of some aspect of the natural environment, not unlike one would take care of another person:

"I have a dog and he's like, he's my child or something. I take care of him. I think he's more important than anything in the world to me." (5F)

One can notice a degree of homocentrism in this care-taking perspective, for there is a way in which the child's relationship to her dog is self-centered: the dog is important to her. But there is also a movement here to understand and accept the dog in its own right, which constitutes a fuller notion of a relationship than does one which is characterized instrumentally in terms of an agent's psychological welfare.

Stewardship. Here there is a focus on taking care of the natural environment in some long-term, less personal, sense:

"[Plants are important] because we're supposed to keep -- take care of all the plants and everything like people have plant stores and they take care of plants." (5M)

"[I care about animals because] those are animals that everyone must take care of...Because God put the animals on earth for people to, like for pet stores. To keep and take care of them." (5M)

The child speaking here is an economically impoverished inner-city child, and thus it is not surprising that his understandings of the natural environment are closely tied up with such city constructs as plant and pet stores. Wide open farm lands and wilderness are not centrally part of his experience. But even given the constraints of the city, one can see a beginning sense of stewardship for the land -- that humans are responsible for the wellbeing of plants and animals.

Potentially stewardship represents a more developmentally advanced form of reasoning over strict personalized caretaking, for the reasoning takes into account a wider biotic community: all animals and plants, not just those few that one happens to have a personal relationship with. We recognize, however, that such a proposition in general -- that personalized caring by itself is developmentally less advanced than other types of caring that take account of a wider if not universal group -- is contested (Gilligan, 1982), and at this point we but raise the issue (cf. Killen, 1991).

Conceptions of Harmony with Nature. The above forms of relational reasoning arose in response to questions for why various aspects of the natural environment are important to the child. We also attempted to tap into biocentric relational reasoning more directly by asking children what it means when someone says that it is important to live in harmony with nature. Here again we saw several overarching viewpoints that appear developmentally structured. While younger children had little trouble talking about the idea of living in harmony with nature, their reasoning kept focusing on actions.

> "[Harmony] would mean you're doing great with not littering, um, not polluting the air." (2M)
>
> "[Harmony means] like peaceful with nature and like no harm happening." (2F)
>
> "She meant like tranquility and happy -- you know flowers in your yard, a big house and sunshine!...Oh they'd be nice, they would come out and water their plants and they wouldn't go into someone's yard and say 'oh that's a pretty flower" and then step on it!... (5F)

Notice that even when this last child brings in such psychological attributes as tranquility and happiness, she still works out the ideas in terms of concrete acts (e.g., flowers in a yard that do not get stepped on).

In contrast, older children began to understand the idea of harmony in terms of a direct equality between humans and nature:

> "Living in harmony is to be equal with other people or to be equal to those below us and not always try to take...not to take more than we give." (8F)

Sometimes this focus on equality led older children to believe that harmony was therefore impossible to achieve:

> "The meaning of harmony to me...it's like living together, being equality.... But it seems that we can't really live in harmony because it's like always polluting um killing animals for survival. It's just like we can't live in harmony without survival." (8F)
>
> "To live in peace -- not have a lot of stuff...Try to get out a lot and spend some time in the woods and stuff. Don't kill animals. DON'T KILL ANIMALS? WHAT ABOUT IF YOU NEEDED TO EAT? Well, I guess you might have to, sometimes you just have to. You still won't be living in harmony if you eat....(8M)

In other words, both children appear to reason as follows: (a) Harmony depends on a concrete equality between humans and nature, whereby both humans and nature live in peace. (b) Humans cannot live without killing parts of nature. Therefore, it follows that (c) humans cannot live in harmony with nature.

Children appear to get out of this dilemma in at least two ways. In one way, children established compensations:

> "Well, a person lives in their forest and this person chops down trees, but he doesn't chop down all the trees, he only chops down some trees and the trees he chops down he plants small trees for." (5M)

Thus, here, while some specific trees in fact get killed, harmony is preserved by planting new ones to replace them. In a second way, older children demarcated needs from desires:

> "Like when you go hunting or something, don't kill more animals than you really need to just kill...Like if you had intentions of killing some animal and then putting some in the freezer, just kill how many you would need for one or two days. That's it, don't go wild try to save everything...don't ever just kill off a whole lot of things and save it. (8F)

> "If you did it intentionally that would be just being inhumane to animals period because they just wasted it they just threw it away because they didn't need it anymore." (8F)

In effect, this demarcation between needs and desires puts things back in balance -- allows for harmony -- even though on an act level one has "taken" (killed an animal) more than one has "given".

It is only with these last examples that we sense older children (8th graders) are beginning to articulate an adult-like view of harmony. Thus we believe that a population of high school and college students would be necessary to study further the development of biocentric reasoning.

Conclusion

As our environmental problems increase, locally and globally, so does the need for environmental education and environmental policy that builds from comprehensive psychological knowledge (cf. Kahn & Weld, 1992; Kahn, in press). This paper provides one approach for a research program in this content area. The approach builds from the social-cognitive tradition, and seeks to understand how children understand and value their relationship with the natural environment.

The initial sketches of our preliminary results from the justification data point to heterogeneity in children's environmental moral reasoning and values. Children considered how environmental degradation affects human welfare; in addition, children showed consideration for the intrinsic welfare and rights of animals, and toward a living relationship with nature. Developmentally, numerous findings are appearing. For example, establishing indirect compensatory relations apparently provided older children a means to conceive of how animals deserve moral consideration even though animals lack many of the characteristics usually attributed to moral agents, such as intentionality, self-consciousness, and free will. Similarly, establishing indirect compensatory relations appear to help children construct an understanding of how it is possible to live in harmony with nature even when recognizing what Dean (1992) characterizes as a central paradox of life, that in order to live something else must die.

What we have presented has been the initial analysis of the justification data. Much more can and needs to be said about this data in conjunction with the evaluation data. Moreover, it is important to establish whether children's evaluations against harming the environment are obligatory judgments (e.g., generalizable and not contingent on law). For such information would determine better the very nature of the judgment which we are characterizing. Our initial sense of the data is that moral obligations cut across many but not all of children's environmental moral judgments, especially when the justifications focus on homocentric (people-oriented) concerns. In contrast, it is our expectation that at least some forms of biocentric reasoning will not entail all the features of a moral obligation. If we are correct, then what exactly do we have?

Moral reasoning, we believe. But it is not of a deontological or consequentialist type that is best characterized in terms of obligation. Rather, the criteria for establishing the discretionary reasoning as moral draws more from virtue theory. Now, for the most part, developmental psychologists during the last several decades have shied away from studying character and virtue development, in part following Kohlberg's (1971) reanalysis of the 1930 Hartshorne and May Studies where he argued that character and virtues are not unified constructs (Kohlberg's "bag of virtues" critique). Indeed, to date, there has been little empirical research to support the character-education proposals (Bennett & Delatree, 1978; Ryan, 1989; Wynne, 1986, 1989) for teaching such "traditional" virtues as loyalty, honesty, kindness, and diligence Moreover, there has been little clarification on how to define and understand the construct of virtue itself, and defend it against social-cognitive critiques (Boyd, 1986, 1989; Lockwood, 1986; Kahn, 1990, 1991). Still, we think the focus on virtue to be important, and hope that such study can be included cohesively and thoughtfully within the social-cognitive field.

Toward this end, we offer one such means. Our proposed approach for researching children's moral relationships with nature seeks in effect to be responsive to two different views on moral theory. One view (which includes both deontology and consequentialism) focuses on a theory of the Right (Kant, 1785/1964; Rawls, 1971), and asks the question, "What does morally right action consist of?" The other view focuses on a theory of the Good (Aristotle; MacIntyre, 1984), and asks the question, "What does it mean to be a morally good person?" Both views are central to children's development (Nunner-Winkler, 1984), and can be found in the diverse constructs analyzed in the moral-developmental literature, including care, justice, altruism, prosocial reasoning, and character. However, to date such constructs are often analyzed in opposition to one another (care versus justice; character development versus reasoning). Alternatively, it is proposed by others (Boyd, 1989; Kahn, 1992; Killen, 1990; Miller & Luthar, 1989; Turiel & Smetana, 1984; Thorkildsen, 1989) that a means is needed for studies to analyze substantively such different moral constructs, and their potential coexistence, coordination, and structural integration. Thus, one of the splendid ramifications of studying children's environmental reasoning is that can foster such analyses.

As noted earlier, the children from one of our two studies lived in an economically impoverished black community within the inner-city of Houston, Texas. In the course of our interviews, the children often talked about violence, crime, and drugs. For instance, local parks and open spaces were viewed by children not as offering some small respite from urban living, but as dangerous places to be avoided. As one first grade child said, "I don't play in my back yard [or parks] that much...because I have more fun inside...because nothing can get me, like a stranger or something." Given such fear of the outside, it might be expected that such children would have little interest in or sensitivity to nature, but rather view the natural environment at worst fearfully and at best instrumentally, in homocentric terms. Our preliminary results reported above, however, speak against such a one dimensional characterization.

One explanation for this potential finding could be drawn from E. O. Wilson's (1984) hypothesis of biophilia: that humans have an innate need to affiliate with other living organisms. Given biophilia, it could be proposed that even an environmentally degraded inner-city cannot squelch the innate responsiveness that children have to nature. To a point, we find Wilson's perspective here intriguing. But Wilson further seeks to embed this perspective within a full sociobiological account. For example, Wilson argues that "the whole process of our life is directed toward preserving our species and personal genes" (p. 121). Elsewhere he says that the "only way to make a conservation ethic work is to ground it in ultimately selfish reasoning..." (p. 131). The overall tenor here fits into the view traditionally ascribed to sociobiology wherein

human agency is epiphenomenal and plays no authentic causal role in our actions. We believe such attempts to undermine human agency (and, in effect, moral responsibility) deeply problematic (Friedman & Kahn, 1991). Thus, if we are understanding Wilson correctly here -- or at least Wilson the scientist, not humanist or poet -- then we might suggest the following: Draw initially from a biological account of biophilia, but then seek as we have in this paper to take seriously though social-cognitive theory the child's developing constructions of environmental knowledge, value, and meaning.

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